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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

In re Application of: Hanson, et al.

§ Group Art Unit: 2161
§
§ Examiner: Elisca, P.
§
§ Atty. Dkt. No.: 5181-15900
§

Serial No. 09/097,468

Filed: June 15, 1998

For: TESTING DEVICE DRIVER HARDENING

CERTIFICATE OF MAILING
37 C.F.R. § 1.8

I hereby certify that this correspondence is being deposited with the U.S. Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on the date indicated below:

B. Noel Kivlin
Name of Registered Representative

May 28, 2002 _____
Date Signature

REPLY BRIEF TO EXAMINER'S ANSWER

Box AF
Commissioner for Patents
Washington D.C. 20231

Sir/Madam:

In response to the Examiner's Answer mailed November 15, 2000, Appellants present this Reply Brief. Appellants respectfully request that this reply brief be entered pursuant to 37 C.F.R. § 1.193(b)(1) and considered by the Board of Patent Appeals and Interferences.

REPLY TO EXAMINER'S ANSWER

A. Claims 1 and 2

Claim 1 recites a test mechanism for testing device driver hardening. The test mechanism includes an intercept mechanism for intercepting device access calls from a device driver under test, and an interface for configuring the intercept mechanism for faults to be injected in response to the device access calls. As noted by the Appellant in the appeal brief filed April 16, 2001, that a device driver is defined in *The New IEEE Standard Dictionary of Electrical and Electronics Terms*, Fifth Edition, as "the **software** that translates device-independent commands into device-specific commands" (Emphasis added). A device driver is thus a **software** entity and independent claim 1 is therefore directed towards testing such a software entity.

On page 4 of his Answer, the Examiner states that "the process of monitoring (monitoring or testing) PCI cycles and issuing error signals, grant, and interrupt lines for the failed DEVICE is equivalent to Applicants claimed invention ..." (Examiner's emphasis). Appellant respectfully asserts that the Examiner's statement is incorrect, and further believes that the Examiner does not appreciate the fundamental differences between the field of endeavor of Appellant's claimed invention and that of the cited references. In light of this statement, it appears that the Examiner has erroneously equated a hardware device to device driver software.

Appellant notes that the cited references, Tavallaei, U.S. Patent 5,864,653, and Splett, U.S. Patent 5,001,712, are directed towards the monitoring of **hardware** devices, and therefore submits that the references are non-analogous to claimed invention. Appellant submits that the devices referred to by the Examiner in the Examiner's answer are **hardware** devices. Furthermore, the cited references provide no teaching whatsoever of any type of software testing, including the testing of device driver software. Neither Tavallaei nor Splett provide any teaching suggestion of the concept of hardened device driver software, or the testing of the hardening of device driver software. Since the cited

references are directed to monitoring and diagnostics of **hardware** devices, while Appellant's claimed invention is directed toward the testing of device driver **software**, it is clear that the cited art is non-analogous with respect to the claimed invention.

In summary, the Examiner has not met the criteria to establish a *prima facie* case of obviousness. First, the prior art does not teach each and every element of the claim. The Examiner has shown no teaching or suggestion in the prior art of device driver software nor any mechanisms for testing device driver software or the hardening of device driver software. Second, since the prior art is non-analogous, there can be no motivation to combine the references in order to obtain the combination of features recited in claims 1 and 2. Furthermore, combining the teachings of the cited references still fails to produce a test mechanism for testing the hardening of device driver software.

Claim 2 is dependent upon claim 1. Appellant submits that the arguments given for claim 1 also apply to claim 2.

B. Claim 3

Claim 3 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 3, in addition to the arguments presented in the appeal brief of April 16, 2001.

C. Claim 4

Claim 4 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 4, in addition to the arguments presented in the appeal brief of April 16, 2001.

D. Claim 5

Claim 5 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 5, in addition to the arguments presented in the appeal brief of April 16, 2001.

E. Claim 6

Claim 6 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 6, in addition to the arguments presented in the appeal brief of April 16, 2001.

F. Claims 7 and 8

Claim 7 and 8 are ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to both claims 7 and 8, in addition to the arguments presented in the appeal brief of April 16, 2001.

G. Claim 9

Claim 9 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 9, in addition to the arguments presented in the appeal brief of April 16, 2001.

H. Claim 10

Claim 10 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 10, in addition to the arguments presented in the appeal brief of April 16, 2001.

I. Claim 11

Claim 11 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 11, in addition to the arguments presented in the appeal brief of April 16, 2001.

J. Claim 12

Claim 12 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 12, in addition to the arguments presented in the appeal brief of April 16, 2001.

K. Claim 13

Claim 13 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 13, in addition to the arguments presented in the appeal brief of April 16, 2001.

L. Claim 14

Claim 14 is ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claim 14, in addition to the arguments presented in the appeal brief of April 16, 2001.

M. Claims 15 and 16

Claims 15 and 16 are ultimately dependent upon claim 1. The arguments given above with respect to claim 1 apply to claims 15 and 16, in addition to the arguments presented in the appeal brief of April 16, 2001.

N. Claim 17

Claim 17 is an independent claim that recites "A computer program product on a carrier medium, the computer program product comprising an intercept mechanism for intercepting **device access calls** from a **device driver under test** and an interface for configuring the intercept mechanism for faults to be injected in response to the device access calls according to a determined desired test pattern." (Emphasis added). Appellant submits that the rejection of claim 17 is erroneous for similar reasons given above with respect to claim 1. In particular, Appellant notes that the cited references provide no teaching of device drivers or the testing of device drivers. Appellant further notes the definition of device driver given above in the discussion concerning claim 1.

Appellant submits that the Examiner has not met the criteria to establish a *prima facie* case of obviousness with respect to claim 17. First, the prior art does not teach each and every element of the claim. The Examiner has shown no teaching or suggestion in

the prior art of device driver software nor any mechanisms for testing device driver software. Appellant further submits that combining the teachings of the cited references fails to produce a test mechanism for testing device driver software as recited in claim 17.

O. Claim 18

Claim 18 is an independent claim which recites "A test mechanism **for testing device driver hardening**, the test mechanism comprising a means for intercepting **device driver access calls** from a **device driver under test** and means for injecting a fault in a response to the device access call according to a determined test pattern." (Emphasis added). Appellant submits that the rejection of claim 18 is erroneous for similar reasons given above with respect to claim 1. In particular, Appellant notes that the prior art provides no teaching of device drivers, the testing of device drivers, or the testing of device driver hardening. Appellant further notes the definition of device driver given above in the discussion concerning claim 1.

Appellant submits that the Examiner has not established a prima facie case of obviousness with respect to claim 18. First, the prior art does not teach or suggest every element of the claim. As previously noted, the prior art provides no teaching or suggestion of device drivers, the testing of device drivers, or the testing of device driver hardening. Second, since the prior art is non-analogous (as noted in the discussion of claim 1), there can be no motivation to combine the references in order to obtain the combination of features recited in claim 18. Finally, combining the teachings of the cited references still fails to produce a test mechanism for testing device driver hardening as recited in claim 18.

P. Claim 19

Claim 19 is an independent claim that recites "A computer comprising **a device driver** for accessing an I/O device and **a test mechanism for testing device driver hardening**, the test mechanism comprising an intercept mechanism for intercepting **device access calls** from a **device driver under test** and an interface for configuring the

intercept mechanism for faults to be injected in response to the device access calls according to a determined test pattern." (Emphasis added). Appellant submits that the rejection of claim 19 is erroneous for similar reasons given above with respect to claim 1, and again notes the definition of a device driver as recited in claim 1.

Appellant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 19. First, the prior art does not teach or suggest every element of the claim. The Examiner has shown no teaching or suggestion in the prior art of a computer system comprising a test mechanism for testing device driver hardening. Second, since the prior art is non-analogous as noted above in the discussion of claim 1, there can be no motivation to combine the references in order to obtain the combination of features recited in claim 19. Finally, combining the teachings of the cited references still fails to produce a test mechanism for testing the hardening of device driver software.

Q. Claim 20

Claim 20 recites "a method of **testing the hardening of a device driver**, the method comprising intercepting **device driver access calls** from the **device driver** and injecting a fault in a device driver access according to a desired test pattern." (Emphasis added). Appellant submits that the rejection of claim 20 is erroneous for similar reasons given above with respect to claim 1, and again notes the definition of a device driver as recited in claim 1.

Appellant submits that the Examiner has failed to establish a *prima facie* case of obviousness with respect to claim 20. First, the prior art does not teach or suggest every element of the claim. The Examiner has shown no teaching or suggestion in the prior art of a method of testing of the hardening of a device driver. Second, since the prior art is non-analogous as noted above in the discussion of claim 1, there can be no motivation to combine the references in order to obtain the combination of features recited in claim 20. Finally, combining the teachings of the cited references still fails to produce a method for testing the hardening of device driver software.

R. Claim 21

Claim 21 is dependent upon claim 20. The arguments given above with respect to claim 20 apply to claim 21, in addition to the arguments presented in the appeal brief of April 16, 2001.

S. Claim 22

Claim 22 is ultimately dependent upon claim 20. The arguments given above with respect to claim 20 apply to claim 22, in addition to the arguments presented in the appeal brief of April 16, 2001.

T. Claim 23

Claim 23 is ultimately dependent upon claim 20. The arguments given above with respect to claim 20 apply to claim 23, in addition to the arguments presented in the appeal brief of April 16, 2001.

U. Claims 24-26

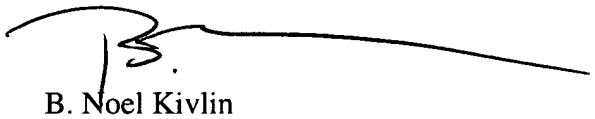
Claim 24-26 are ultimately dependent upon claim 20. The arguments given above with respect to claim 20 apply to claims 24-26, in addition to the arguments presented in the appeal brief of April 16, 2001.

CONCLUSION

For the foregoing reasons, it is submitted that the Examiner's rejection of claims 1-26 was erroneous, and reversal of his decision is respectfully requested.

This Reply Brief is submitted in triplicate along with a return receipt postcard.

Respectfully submitted,



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Date: May 28, 2002